**Big Ideas:**

Properties of gases can be described qualitatively and quantitatively, and can be predicted.

Air quality can be affected by human activities and technology.

People have a responsibility to protect the integrity of Earth’s atmosphere.

**Overall Expectations:**

By the end of this course, students will:

F1. analyse the cumulative effects of human activities and technologies on air quality, and describe some Canadian initiatives to reduce air pollution, including ways to reduce their own carbon footprint

F2. investigate gas laws that explain the behaviour of gases, and solve related problems

F3. demonstrate an understanding of the laws that explain the behaviour of gases.

**Overarching Question:**

How can we use our understanding of the physical and chemical properties of gases to explain natural phenomena in, and assess human impact on, the atmosphere, in both local and global contexts?

**Guiding Questions:**

1. How can we use models such as kinetic molecular theory to distinguish the physical properties of molecules in gaseous state from those in solids and liquids?

2. What are the qualitative and quantitative relationships between pressure, volume, temperature, and mass of a gas?

3. How can we use stoichiometry and the variable physical properties of gases to quantitatively predict the outcome of chemical reactions involving gases?

4. What are some of the social, technological, and environmental considerations related to gas and atmospheric chemistry?